

Suppression of Localized Metal Precipitate Formation and Corresponding Metallization Depletion in Semiconductor Processing

Abstract

A method and structure for suppressing localized metal precipitate formation (LMPF) in semiconductor processing. For each metal wire that is exposed to the manufacturing environment and is electrically coupled to an N region, at least one P+ region is formed electrically coupled to the same metal wire. As a result, few excess electrons are available to combine with metal ions to form localized metal precipitate at the metal wire. A monitoring ramp terminal can be formed around and electrically disconnected from the metal wire. By applying a voltage difference to the metal wire and the monitoring ramp terminal and measuring the resulting current flowing through the metal wire and the monitoring ramp terminal, it can be determined whether localized metal precipitate is formed at the metal wire.